

### **AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior listings of claims in the application.

#### **LISTING OF CLAIMS:**

1. (Currently Amended) A method for assessing ecological risk to **[[animals]]** mammals, comprising:

**[[a)]]** obtaining a representative sample of rodents from a contaminated site,  
wherein the rodents reflect generations of exposure to the contaminated site;

**[[b)]]** obtaining a representative sample of rodents from an animal reference site;

**[[c)]]** performing a first sperm analysis of the rodents from the contaminated site,  
wherein the first sperm analysis includes measuring sperm count;

**[[d)]]** performing a second sperm analysis of the rodents from the animal reference site, wherein the second sperm analysis includes measuring sperm count;

**[[e)]]** comparing at least one result of the first sperm analysis with at least one result of the second sperm analysis;

**[[f)]]** determining whether the comparison between the at least one result of the first sperm analysis and the at least one result of the second sperm analysis exceeds one or more sperm parameter benchmarks, thereby indicating if the rodents from the contaminated site have impaired reproductive capability and assessing the ecological risk to **[[animals]]** mammals at the contaminated site.

2. (Currently Amended) The method of claim 1, ~~wherein step (a) includes~~ comprising obtaining a representative sample of mice at the contaminated site.

3. (Currently Amended) The method of claim 1, ~~wherein step (b) includes~~ comprising **[[trapping]]** obtaining a representative sample of mice at the animal reference site.

4. (Canceled)

5. (Original) The method of claim 1, wherein the first and second sperm analysis include measuring sperm motility.

6. (Original) The method of claim 1, wherein the first and second sperm analysis include measuring sperm abnormality.

7. (Withdrawn) The method of claim 1, further comprising corroborating the first and second sperm analysis with population data.

8. (Withdrawn) The method of claim 7, wherein the population data relates to species diversity.

9. (Withdrawn) The method of claim 7, wherein the population data relates to population size.

10. (Withdrawn) The method of claim 7, wherein the population data relates to sex ratio.

11. (Withdrawn) The method of claim 17, wherein the data relates to lactation state.

12. (Withdrawn) The method of claim 17, wherein the data relates to pregnancy.

13. (Canceled)

14. (Withdrawn) A method according to Claim 1, wherein the contaminated site is contaminated with uranium.

15. (Previously Presented) A method according to Claim 1, wherein the contaminated site is contaminated with explosives.

16. (Previously Presented) A method according to Claim 1, wherein the rodents from the contaminated site reflect one hundred generations of exposure to the contaminated site.

17. (Withdrawn) A method according to Claim 1, further comprising corroborating the first and second sperm analysis with data relating to female reproductive state.

18. (Currently Amended) A method for assessing ecological risk to **[[animals]] mammals**, comprising:

collecting a representative sample of rodents from a contaminated site, wherein the rodents reflect generations of exposure to the contaminated site;

collecting a representative sample of rodents from an animal reference site;

comparing sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site with the rodents from the animal reference site; and

determining whether the comparison between the sperm count, sperm motility, or sperm morphology of the rodents from the contaminated site and of the rodents from the animal reference site exceeds one or more sperm parameter benchmarks, thereby indicating if the rodents from the contaminated site have compromised reproductive success and making a determination about the health of terrestrial site **[[animals]] mammals** at the contaminated site.

19. (Previously Presented) A method according to Claim 18, wherein a decrease of approximately 80% to 90% in sperm count indicates comprised reproductive success.

20. (Previously Presented) A method according to Claim 18, wherein a decrease of about 40% to 50% in sperm motility indicates comprised reproductive success.

21. (Previously Presented) A method according to Claim 18, wherein an increase of 4% or more of abnormally-shaped sperm indicates comprised reproductive success.

22. (NEW) A method for assessing ecological risk to mammals, comprising:  
collecting a sample of rodents from a contaminated site, wherein the rodents reflect generations of exposure to the contaminated site;  
collecting a sample of rodents from a reference site;  
comparing sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site with the rodents from the animal reference site;  
determining whether the comparison between the sperm count, sperm motility, and sperm morphology of the rodents from the contaminated site and of the rodents from the reference site exceeds one or more sperm parameter thresholds-for-effect, thereby indicating if the rodents from the contaminated site have compromised reproductive success; and  
making a determination about the potential health effects to mammals at the contaminated site.

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23. (NEW) A method according to Claim 22, further comprising comparing organ-to-body weight ratios of the rodents from the contaminated site with the rodents from the animal reference site.